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Minutes-184
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ORGANISATION EUROPEENNE POUR LA RECHERCHE NUCLEAIRE

CERN EUROPEAN ORGANIZATION FOR NUCLEAR RESEARCH

CERN RESEARCH BOARD

MINUTES OF THE 184th MEETING OF THE RESEARCH BOARD HELD ON WEDNESDAY 28 MAY 2008

Present L. Alvarez-Gaume, R. Aymar (Chairman), J.J. Blaising, J. Dainton, J. Engelen, L. Evans, M. Ferro-Luzzi, R. Forty (Secretary), E. Heijne, A. Herlert, M. Huyse, M. Metzger, S. Myers, E. Perez, W. von Rüden, L. Walckiers (replacing P. Lebrun), T. Wyatt

Invited M. Teshima, R. Voss (for Item 2)

Apologies P. Lebrun, V. Vuillemin

Items

1. Procedure
2. Application of MAGIC for Recognized Experiment status
3. Report from the LHCC meeting of 7-8 May 2008
4. Report from the SPSC meeting of 22-23 April 2008
5. Report from the INTC meeting of 19-20 May 2008
6. Any other business

1. PROCEDURE

1.1 The **minutes** of the Research Board meeting held on 27 February 2008 [1] were approved without modification. There were a number of **matters arising** from the minutes, listed in the following paragraphs.

1.2 In Item 1.2 it was stated that a discussion would be organized between **NA61** and experts from the AB department. S. Myers reported that this meeting had taken place, with the following conclusions [2]: if NA61 were to be approved for Heavy Ion running they would use the same type of ion as ALICE, and the first year of NA61 physics with Pb ions could not take place before 2011. They would need to submit a new proposal to the SPSC for Pb ion physics, or secondary ions resulting from the primary Pb ion beam fragmentation. For such a programme additional manpower and financial resources would be required. **The Research Board took note.**

1.3 In Item 3.2 it was stated that J. Engelen would discuss with representatives from AB department to quantify the resources required for extension of **AD** operation beyond 2010. J. Engelen reported that the discussion had taken place, and letters had been received from the user community expressing their enthusiasm for continuation of the AD programme, for which the scientific case was supported by the SPSC. The new proposed experiment, AEGIS, would only be feasible if the AD operation were to be extended beyond 2010. S. Myers reported that a risk analysis had been performed, and that the cost of consolidation of the AD facility for running until 2015 had been determined. The ELENA upgrade to the AD would approximately double that cost. In the longer term, there is possible competition from the FLAIR facility proposed at GSI. If the end-date of AD operation were to be fixed, then the risk analysis and corresponding consolidation plan would be affected. **A report from AB department is requested for the next Research Board, specifying the resources required for consolidation of the AD under two scenarios: end of operation in 2012, or in 2016.**

1.4 In Item 3.3, concerning the Giga-Tracker R&D of **P326**, it was stated that the CERN directorate would like to understand further the availability of external resources, and the impact of spreading the development over more than one year. J. Engelen reported that the R&D is already proposed to be spread over 2008 and 2009, and that substantial funds have been reserved for the eventual experiment by INFN. A

Memorandum of Understanding will be required, and is in preparation. J.J. Blaising stated that there was synergy with the R&D planned for detectors at future accelerators, but that some limited support from CERN would be needed for the Giga-Tracker R&D over the next two years. **The level of support required from CERN must be defined in discussion with the CERN directorate before a decision can be taken.**

1.5 In Item 3.4, concerning **OSQAR** running in 2008 and beyond, it was stated that J. Engelen would first report on the organization of the collaboration, and their plans for the future. J. Engelen reported that a meeting had taken place with the proponents, that their collaboration is well organized, and that a Memorandum of Understanding was in preparation. L. Walckiers confirmed that the resources needed for running OSQAR in 2008 were minor compared to the requirements for maintenance of the LHC magnets, and could be met within the AT budget. **The Research Board approved running of OSQAR in 2008; running after this year would require an updated proposal from the collaboration, and MoU.**

1.6 For Item 5.2, concerning radioactive waste management for the used targets of **ISOLDE**, S. Myers reported that 162 target storage spaces in the ISR area are currently in use. The provision of at least an additional 60 target storage spaces will be ensured, sufficient for the next two years of ISOLDE operation. A plan for the longer term management of the waste should be put into place during that period, and should be coordinated with the management of any other sources of radioactive waste on the CERN site. **The Research Board took note.**

1.7 In Item 6.1 concerning the accelerator schedules for 2008, it was stated that J. Engelen would discuss with representatives from **DIRAC** to understand what the impact would be of a reduced rate of beam pulses, so as to reduce risk of damage to the PS power supply. An initial discussion had taken place, but S. Myers reported that meanwhile the PS cycle had been adjusted to reduce vibration while maintaining a 25% margin on the overall load. As a result the delivery of beam to DIRAC can be maintained at the level previously foreseen for this year, while reducing the risk to the supply. The adjusted cycle is incompatible with nTOF operation, so further adjustment will be required for the planned operation of nTOF in 2009. **The Research Board took note.**

2. APPLICATION OF MAGIC FOR RECOGNIZED EXPERIMENT STATUS

2.1 M. Teshima presented the MAGIC experiment, a 17-m diameter gamma-ray telescope sited on La Palma in the Canary Islands, the largest Cherenkov telescope in the world, with an angular resolution of 0.1º [3]. The scientific goals include the study of gamma-ray bursts, supernova remnants and pulsars, and they recently made the first observation of a pulsed VHE gamma-ray signal from the Crab nebula. The experiment can also make an interesting probe of quantum gravity, from the measurement of the arrival time of gamma rays. A second telescope, MAGIC II, is under construction, and should improve the sensitivity by a factor of two. There is potential for collaboration with CERN on some of the high technology R&D that is required by the experiment, for example on high quantum-efficiency photodetectors.

2.2 R. Voss then gave his report as CERN rapporteur [3]. The experiment has a strong scientific programme and satisfies the formal requirements for recognition. Concerning their requests to CERN, these include the use of a team account for management of part of their common fund, minor computing requirements, and small office space, although the latter may already be available from those amongst their collaborators who are CERN users. They also request some use of laboratories and workshop facilities for detector development, the details of which have not been worked out yet. **The Research Board granted Recognized Experiment status to MAGIC, on condition that a Memorandum of Understanding is established between the collaboration and CERN, specifying the use that may be made of CERN resources. Their reference number will be RE17, and the Recognized Experiment status will be reviewed after a period of three years.**

3. REPORT FROM THE LHCC MEETING OF 7-8 MAY

3.1 T. Wyatt presented the report from the latest meeting of the LHCC, including mini-reviews of ALICE and CMS, as well as progress reports from the LHC machine and the other experiments [3]. The cool-down of the machine is expected to be complete in July, and collisions are planned later in the Summer, at an energy limited to 10 TeV for 2008. Both ATLAS and CMS have experienced problems with the cooling systems for their silicon detectors, nevertheless they are proceeding with the completion of their experiments to be ready for first beam. L. Evans pointed out that

if the experiments need extra time they should request it. **The Research Board took note.**

3.2 The R&D project **RD42** has made good progress over the last year in the development of intrinsically radiation hard diamond detectors from the Chemical Vapour Deposition process. The LHCC recommends that the RD42 project be continued in 2008, and this was **endorsed by the Research Board.**

4. REPORT FROM THE SPSC MEETING OF 22-23 APRIL 2008

4.1 J. Dainton presented the report from the latest meeting of the SPSC, including annual reviews of CAST, CLOUD, DIRAC and NA63 [3]. Concerning CLOUD the committee notes the request from the collaboration to delay the next data-taking period to 2009, and continues to look forward to the publication of their results. J. Dainton also reported that OPERA are making good progress in the production of their target bricks, ready for data taking this year. The SPSC supports the COMPASS request for a central hadron physics run in 2008, in addition to the previously approved diffractive run, and the results from this will provide a basis for evaluating any request for further hadron beam running. **The Research Board took note.**

4.2 Concerning **DIRAC**, the SPSC notes progress with the upgrade of their trigger electronics, but delivery of high intensity beam to the experiment will be contingent on the demonstration that data can be taken at a correspondingly high rate; E. Perez commented that this will be monitored during the regular scheduling meetings. **Continued running of DIRAC in 2009 will depend on the outcome of their 2008 data taking.**

4.2 J.J. Blaising stated that funds were missing for the continuation of the non-LHC part of the CERN programme, and that this would cause serious difficulties in the near future. S. Myers commented that during the period of LHC start-up there would be a reduced availability of experts for the maintenance of other beams, and this may lead to interruptions in the availability of such beams. R. Aymar responded that while there was a strong wish to maintain the diverse programme of physics activity at CERN, the funding would indeed remain very tight until 2011 and the continuation of

the non-LHC programme would have to be on a best-effort basis consistent with the funding constraints.

5. REPORT FROM THE INTC MEETING OF 19-20 MAY 2008

5.1 M. Huyse reported on the recent meeting of the INTC, including discussion of the technical activities during the shutdown, the status of the HIE-ISOLDE project, and the status of ISOLDE scheduling [3]. The new target design for nTOF will be ready later this year. J. Engelen noted that for the HIE-ISOLDE project about half of the required funding has so far been secured from external bodies. He requested that a written report on the planning should be submitted to the Research Board for approval. **The Research Board took note.**

5.2 Six ISOLDE proposals were recommended for approval at the last INTC meeting, for a total of 120 shifts (out of 204 requested). They are listed in the following paragraphs.

5.3 **P243** *Fast-timing studies of nuclei below ^{68}Ni populated in the beta-decay of Mn isotopes* [4] was **approved for 24 shifts**, and will be known as IS474.

5.4 **P244** *Measurements of octupole collectivity in ^{220,222}Rn and ^{222,224}Ra using Coulomb excitation* [5] was **approved for 22 shifts**, and will be known as IS475.

5.5 **P248** *Studies of beta-delayed two-proton emission: The cases of ^{31}Ar and ^{35}Ca* [6] was **approved for 27 shifts**, and will be known as IS476.

5.6 **P201** *Ultra Fast Timing Measurements at ^{78}Ni and ^{132}Sn* [7] was **approved for a further 11 shifts**, and will continue to be known as IS441.

5.7 **P222** *Study of polonium isotopes ground state properties by simultaneous atomic- and nuclear-spectroscopy* [8] was **approved for a further 24 shifts**, and will continue to be known as IS456.

5.8 **P183** *Charge radii of magnesium isotopes and transition to a deformed configuration towards N = 20* [9] was **approved for a further 12 shifts**, and will continue to be known as IS427.

6. ANY OTHER BUSINESS

6.1 The **next meeting** of the Research Board will be held on 3 September 2008.

ENCLOSURES

1. Report on SPS Ion Fixed Target Operation.
2. Minutes of the 93rd LHCC meeting held on 7-8 May 2008 (CERN/LHCC-2008-008).
3. Minutes of the 86th SPSC meeting held on 22-23 April 2008 (CERN/SPSC-2008-016).
4. Minutes of the 31st INTC meeting held on 19-20 May 2008 (CERN/INTC-2008-031).

REFERENCES

[1] Minutes of the 183rd meeting of the Research Board (CERN/DG/RB 2008-382/M-183).

[2] Report on SPS Ion Fixed Target Operation (attached).

[3] Copies of the transparencies are attached to the agenda: http://indico.cern.ch/conferenceDisplay.py?confId=33138

[4] Fast-timing studies of nuclei below ^{68}Ni populated in the beta-decay of Mn isotopes (CERN/INTC-2008-020).

[5] Measurements of octupole collectivity in ^{220,222}Rn and ^{222,224}Ra using Coulomb excitation (CERN/INTC-2008-021).

[6] Studies of beta-delayed two-proton emission: The cases of ^{31}Ar and ^{35}Ca (CERN/INTC-2008-028).

[7] Ultra Fast Timing Measurements at ^{78}Ni and ^{132}Sn (CERN/INTC-2008-024).

[8] Study of polonium isotopes ground state properties by simultaneous atomic- and nuclear-spectroscopy (CERN/INTC-2008-022).

[9] Charge radii of magnesium isotopes and transition to a deformed configuration towards $N = 20$ (CERN/INTC-2008-019).

SPS Ion Fixed Target Operation

M. Gazdzicki, S. Maury

After discussion with representatives of NA61 Experiment, we finally agreed that:

1. NA61 will use the same type of ion as ALICE and for the choice of the light ion species a discussion between all users is necessary
2. The first year of NA61 Physics with Pb ions cannot take place before 2011
3. For heavy ion extraction for NA61, an additional SPS ion cycle and new hardware will be needed. The commissioning could take place in 2010
4. NA61 should go through the SPSC with a new proposal for lead ions physics or secondary ions resulting from the primary Pb ion beam fragmentation.
5. For preparing the p-Pb collisions in LHC (2012?) studies should start at least 2 years before. For the light ions species studies one or two years are needed.

Preliminary calendar:

As NA61 will use the same ion species as ALICE, this calendar is strongly LHC Physics dependent.

2009: - Complete the SPS commissioning with Pb ions
- Commissioning of the LHC with Pb ions
- LHC Physics run with Pb ions, early beam
- Nominal Pb ion beam studies

A total of 29 weeks is necessary. The number of necessary weeks for each process is the same as presented in ABMB of 1/10/2007 in "Compatibility between NA61 and I-LHC".

2010: - LHC Physics run with Pb ion beam (early/intermediate beam)
- p-Pb studies (on paper or in the injectors)
- Hardware commissioning in SPS for NA61

A total of 18 weeks is necessary.

2011: - Light ion1 studies (source)
- LHC Physics run with Pb ion intermediate/nominal beam and NA61 Physics run with Pb ion beam or secondary ion beams
- Commissioning of p-Pb in the injectors

A total of 29 weeks is necessary.

2012: - Commissioning of light ion1 in the injectors
- LHC Physics run with p-Pb collisions
- NA61 Physics run with Pb or secondary ion beam

A total of 31 weeks is necessary.

2013: - Light ion2 studies (source)
- LHC Physics and NA61 Physics run with light ion1 beam

A total of 29 weeks is necessary.

2014: - Commissioning of the injectors with light ion2 beam
- LHC Physics and NA61 Physics run with light ion2 beam

A total of 31 weeks is necessary.

Conclusion:

1. The ion injector chain will be very busy in operation from April to December during the coming years.
2. Resources are needed (money, manpower and operations team)
3. Solutions to all the modifications in the SPS (cycle, North Area) should be solved for the year 2010.

CERN/LHCC 2008-008
LHCC 93
8 May 2008

LARGE HADRON COLLIDER COMMITTEE

Minutes of the ninety-third meeting held on
Wednesday and Thursday, 7-8 May 2008

OPEN SESSION

1. LHC Status Report: Lyn Evans
2. LCG Status Report: Ian Bird
3. ATLAS Forward Detectors for Measurement of Elastic Scattering and Luminosity (LHCC 2008-004 / ATLAS TDR 18): Per Grafström
4. Physics Motivation for an LHC Luminosity Upgrade: Jonathan Ellis

CLOSED SESSION:

Present: J.-J. Blaising, S. Dalla Torre, S. de Jong, J. Engelen, M. Ferro-Luzzi*, F. Forti, M. Gonin, J. Haba, V. Kekelidze, J. Knobloch, M. Mangano, R. Mankel, M. Martinez-Perez, P. Mato, C. Niebuhr, E. Perez*, B. Peyaud, S. Smith, E. Tsesmelis (Secretary), T. Wyatt (Chairman), R. Yoshida

*part-time

1. PROCEDURE

The minutes of the ninety-second LHCC meeting (LHCC 2008-003 / LHCC 92) were approved.

2. REPORT FROM THE CHIEF SCIENTIFIC OFFICER

The Chief Scientific Officer (CSO) reported on issues related to the LHC. Cool-down of the LHC accelerator is expected to be complete by the end of June 2008 with access to the LHC accelerator and to the experimental areas closed in mid-July 2008. The first try to inject beam into the LHC is scheduled for the end of July 2008. The LHC experiments are advancing well and are expected to meet the above LHC milestones. Due to training quenches in the LHC dipoles at 5.8 TeV, the start-up LHC centre-of-mass energy will be 10 TeV, as has been agreed with the experiments and commissioning to 7 TeV beam energy will continue during the winter shut-down. The next meeting to review the LHC schedule is set for the end of June 2008.

3. REPORT ON THE ALICE MINI-REVIEW

The LHCC heard a report on the first ALICE Mini-Review, concentrating on integration issues, commissioning of the ALICE experiment, computing and physics studies.

Installation, Integration and Schedule

Steady progress was reported on the installation and integration of the various ALICE sub-systems. Installation of the full set of 16 Time-of-Flight (TOF) modules has been completed and the installation of the Muon Tracking Chambers is approaching completion. Repair of 25 front-end electronics cards for the Time Projection Chamber (TPC) is on-going but concerns remain whether the repair will be complete prior to first LHC beams. The long-standing noise problem in the TPC and Muon Tracking Chambers has been identified to be due to the low voltage power supply and work is in progress to reduce the noise. The updated ALICE schedule has only one (out of 5) Photon Spectrometer (PHOS) modules, four (out of 18) Transition Radiation Detector (TRD) modules and one (out of 4) Photon Multiplicity Detector (PMD) sectors installed for the first LHC beams to come at the end of July 2008. The LHCC expressed its concern regarding the readiness of the Inner Tracking System (ITS) as its cooling plant has not yet been running in stable mode.

Commissioning

Considerable progress has been achieved in the commissioning phase of the experiment. Three commissioning runs have been held or are in progress, with each subsequent phase having additional elements of the ALICE experiment participating. The global cosmic run including the TPC has not yet reached its full strength. It is thus the most critical missing elements required to establish the global DAQ with the TPC as well as the ITS and to collect the first substantial set of the alignment data for these detectors. The routine and reliable use of the on-line system is yet to be achieved and the choice made to operate partitions is very pragmatic. The ALICE Collaboration should now decide on a clear priority along these lines to secure good quality of data recording during the first (and short) run to come in 2008. This strategy will obviously allow the understanding in greater detail of the real performance of the detector. Successful global commissioning is possible with all the relevant persons in place for a long time. Good co-ordination and strong leadership is essential.

Computing

Much progress has been achieved in the ALICE computing and quality assurance framework. The analysis framework, AliRoot, now has 1M and 0.5M lines of C++ and Fortran code, respectively. Grid Storage strategy is well designed. The scheme of the online calibration and the online quality assurance are almost established and demonstrated to work in the cosmic-ray run. The Detector Control System (DCS) is advancing well but yet to be fully-functional in the cosmic-ray run.

Physics Studies

The current planning for the first physics paper(s) appears well motivated and robust. The measurement of the average track multiplicity will provide a first valuable validation of the modeling of pp collisions at LHC energies, and should be do-able with modest statistics, well within the expected luminosity of the 2008 operations, and with the anticipated detector performance. The measurement of the D-meson production cross

section is much more ambitious in terms of statistics, of detector performance, and of beam conditions.

The referees endorse the overall action plan of the experiment, which includes the establishment of a full-time task force dedicated to preparing these first analyses, and the early writing of the paper draft outlining the analysis.

Overall Conclusion

The LHCC notes that all components of the initial ALICE experiment are installed and close to completing their commissioning whilst the preparation for the first LHC run and physics is well-advanced. The Committee considers that it is realistic to expect ALICE to have an initial working detector for the start of LHC operation in 2008.

4. REPORT FROM THE ATLAS REFEREES

The LHCC heard a report from the ATLAS referees, concentrating on the status of the detector and the Full Dress Rehearsal.

The referees reported on the status of the ATLAS detectors. Excellent progress was reported on the Semiconductor Tracker (SCT) and Transition Radiation Tracker (TRT) of the Inner Detector, on the Calorimeters and on the Muon Spectrometer. All sub-systems are operational and commissioning is well underway. The ATLAS Control Room is nearly ready. Both End-cap Toroid (ECT) magnets have been tested up to 75% of the nominal current and a combined test of the ATLAS magnets is scheduled to start in early June 2008. Closing of the ATLAS detector has started in preparation for first LHC beams later in 2008. The LHCC noted as a major concern the risk to the timely completion of the commissioning of the Pixel Detector cooling system. Three out of six compressors were damaged with about 100 kg of coolant lost and the remaining 900 kg requiring purification. The Committee considers this issue to be critical and should be clarified and resolved as a matter of utmost urgency as it has implications for the signing off of the Pixel Detector and for completing the beam pipe bake out.

The Committee also heard a report on the ATLAS Full Dress Rehearsal (FDR), which provides a realistic test of the full data processing chain from the online system to the physics analysis. Data analysis for FDR-1 is on-going and FDR-2 is in preparation and it is expected to correspond to ten times more integrated luminosity compared to FDR-1. The FDRs have proven to be useful exercises as they provide a test-bench for LHC running. In order to improve the effectiveness of the FDRs, more realistic conditions of data and processing distributions should be implemented as well as increasing the number of participants.

The LHCC took note of the submission of the ATLAS Technical Design Report regarding the Forward Detectors for the Measurement of Elastic Scattering and Luminosity (LHCC 2008-004 / ATLAS TDR 18). Following the standard reviewing process, the LHCC will present its recommendations at an upcoming session of the Committee.

5. REPORT ON THE LHCb REFEREES

The LHCC heard a report from the LHCb referees, concentrating on the status of the detector, the computing and physics aspects, and the expression of interest for the upgrade of the LHCb detector.

The referees reported on the status of the LHCb infrastructure and detectors. Essentially all the infrastructure is in place. The faults with the rack turbines are under investigation. Good progress was reported on the readiness of LHCb for first LHC beams in 2008 with most systems having made good progress. Failures of the TELL1 read-out board are been recovered and power supplies for the Calorimeters are being repaired. The issues regarding the Outer Tracker (OT) gain loss are being mitigated with the *in situ* heating of the installed OT modules and with the Tra-Bond glue replacing the Araldite glue. The LHCC expressed concern at the rate of Hybrid Photo Diodes (HPDs) that have experienced vacuum problems, particularly for those installed in the RICH-2 Ring Image CHerenkov detector. Discussions with the supplier are in progress and a remedy is being put in place. Commissioning of the experiment is advancing well. Most of the LHCb sub-detectors are participating in the cosmic-ray runs, events are triggered by the Calorimeters and Muon System and the complete software chain functions well. Good progress was reported on the computing and physics aspects, with clear views and choices having been made. Issues of interface with the LHC machine are being followed up, and in particular the radiation tolerance of cryogenic equipment in the UX85 cavern and limitations on the β^* at the LHCb interaction point need to monitored carefully.

The LHCC took note of the submission of the Expression of Interest for an LHCb Upgrade (LHCC 2008-007).

6. REPORT FROM THE LCG REFEREES

The LHCC heard a report from the LCG referees, concentrating on the Common Computing Readiness Challenge (CCRC08), the status of the storage resource management and the project milestones.

Phase I of the CCRC08 proved to be a very useful exercise as it helped in the understanding of the outstanding and weak aspects of the service, identifying pragmatic solutions in the process. The deployment, configuration and usage of the Storage Resource Manager SRM v2.2 went well and an improvement of the service was noticeable. Phase II started in early May 2008. The middleware and storage versions have been defined, numerous operational improvements are to be implemented and the 3D database is in full service. The LHCC considers that an annual CCRC exercise is of value as it would integrate experience gained from LHC operations. Good progress was reported on the CASTOR v2.1.7 storage service and on the middleware. The referees also reported on the LCG Project milestones. Not all sites are at the pledged capacity and some delays in the procurement of resources have been reported. The round-the-clock support has not yet been tested at all Tier-1 sites, and remains critical for effective LHC operations.

7. REPORT ON THE CMS MINI-REVIEW

The LHCC heard a report on the first CMS Mini-Review, concentrating on the installation and commissioning, the readiness of CMS sub-detectors, trigger / DAQ, computing, monitoring of the detector performance and preparations for physics.

Construction, Integration, Installation, and Commissioning

CMS is continuing to make very good progress in the preparation of the experiment in time for the first LHC run in 2008. All CMS sub-detectors have been installed, except for the Pixel Detector, the End-cap Electromagnetic Calorimeter (EE) and the Preshower Detector (PS). It is expected that by July 2008 all CMS sub-detectors will be installed except for one EE and the PS. The solenoid has been cooled to operating temperature, and a low-field (2 T) test is planned for the end of May 2008. CMS is planning to close the experiment by mid-July 2008 and take cosmic-ray data at the operating field of 3.8 T for the period before first LHC beams. Commissioning of the CMS experiment is advancing steadily and more complete set-ups in complexity and functionality are introduced into the commissioning runs, including the trigger and DAQ systems. Cosmic-ray runs without magnetic field have commenced and first measurements have been made with 85% of the CMS detector participating. The Tracker has been connected and is now also being commissioned - noise performance with the final cabling and grounding is even better than it was in the Tracker Integration Facility (TIF).

The referees reported on issues concerning the operation of two of the CMS sub-detectors. The open-mode operation of the Resistive Plate Chambers (RPCs) over several months in the laboratory has worked well with stable currents, but currents increase in re-circulation mode as the filters age. Although the situation has improved, R&D is continuing to achieve the high-percentage recirculation required to operate at reasonable cost. Moreover, studies are continuing on investigating the noise phenomena related to electrical surface flash-over for the insulators of the Hybrid Photo Diodes (HPDs) of the Hadronic Calorimeters (HCAL). No evidence of ageing has been seen.

The LHCC took note of preparations and concerns for the sustained operation of the CMS experiment and associated infrastructure. In an effort to ensure the long-term operation of the experiment, sub-system field teams must be reinforced, the experimental area team must be supported and the infrastructure must be consolidated. A re-assessment of the situation will be done following the cosmic-ray runs.

Status and Issues of Sub-detectors Still Under Construction

The Committee heard reports on the detector components which are still under construction. For EE detectors, additional manpower was added to the project. Gluing of the vacuum phototriodes (VPTs) on the last 100 crystals is ongoing and assembly of the super-crystals will finish by end of May 2008. The present schedule foresees completion of the first two Dees in the first half of June 2008. Although for Dee-1 this corresponds to a delay of 3 weeks with respect to the schedule presented in February 2008, the impact on the schedule for the remaining two Dees is small. Dee-3 and Dee-4 are still expected to be ready by 21 July 2008, which means that the second End-cap will be too late for installation in CMS given the present machine schedule. Progress was also reported for the PS detector. The 50% milestone for the production of full modules was passed on 25 April 2008. First experience with the assembly and cabling has been gained but not all of the necessary steps have been exercised yet and the process is still in the learning phase. Although the present schedule does not have much contingency, the goal is to have one PS ready by mid-July 2008. This would allow installation in CMS together with the second EE.

Excellent progress was reported in the area of the Pixel Detector. All components for the barrel Pixel Detector (BPIX), including the supply tubes and their assembly, are finished. The BPIX commissioning system was transported from PSI to CERN on 25 April 25 2008. Test installations of barrel and forward pixel systems in the CMS Tracker in the presence of the final beam pipe were successfully exercised on 5-6 May 2008. Commissioning tests of all half cylinders (HC) of the forward pixel (FPIX) system at the Tracker Integration Facility (TIF) were completed end of March 2008. Valuable real operation experience was gained with one pixel panel that was installed at Point 5 in February 2008 and participated successfully in the March 2008 global run. Both pixel systems will be ready for installation by the end of May 2008.

Trigger, DAQ and High-Level Trigger

The completion phase of the Trigger, DAQ and High-Level Trigger (HLT) is progressing very well, and the remaining tasks before LHC start-up appear to be manageable. All trigger systems have now been tested in cosmic-ray operations. The Global Calorimeter trigger is progressing well and is expected to be complete for June 2008. The remaining missing hardware is for the RPC End-cap (expected to be completed by the end of June 2008) and the EE trigger board (scheduled for autumn 2008, and is now under negotiation with the manufacturer). The DAQ capacity will be 7 kHz using an event builder (EVB) farm which will increase to 50 kHz by September 2008 with procurement of 900 PCs for the Filter Farm. The procurement for the PCs is being closely watched and currently appears to be under no risk of delays. The Level-1 trigger software and the emulators, as well as HLT infrastructure and validation farm are operational. The HLT trigger menus for the start-up, resulting from those prepared for Computing, Software and Analysis 2008 (CSA08), are in place and are being refined.

Offline and Computing

During the last few months, the CMS Collaboration has made an effort to improve the performance of the offline software in terms of memory consumption and event size compared to that observed during CSA07. Figures close to those anticipated in the Computing Technical Design Report are now being reached. A consistent monitoring of performance for new software releases should be maintained, and a further reduction on figures achieved in view of future developments on Monte Carlo event generation, with an improved calorimeter simulation and the addition of pile-up contributions, should be obtained. Significant progress has been made on fast and full Monte Carlo simulation and event generation, where the main effort is now focused on the completion of essential functionalities such as the implementation of the final detector geometry and magnetic field.

The commissioning of the data transfer across Grid links from the Tier-0 centre to Tier-1 and Tier-2 centers seems to be well advanced. All Tier-1 to Tier-1 links have been tested and about 50% of the Tier-1 to Tier-2 connections have been commissioned. Similar good progress is observed on the preparation of the Calibration Analysis Facility (CAF) at CERN. In addition, the so-called CMS Center at CERN is now complete and available for users.

Data transfers across the Grid, calibration and alignment workflows, and the CAF performance will be tested during the upcoming CSA08 and CCRC08 campaigns, for which the CMS Collaboration has already generated a sample of more than 0.5 billion Monte Carlo events.

Detector Performance Groups and Detector Quality Management

The Detector Performance Groups are responsible for the development, optimization, and maintenance of detector-specific software such as local reconstruction, simulation, calibration, alignment and detector performance monitoring (DQM). The groups have been very active participating in the global commissioning runs and the CSA challenges. Considerable progress on the software for simulation, triggering and reconstruction for all sub-systems has been reported, including a significant reduction in RECO reconstruction and AOD analysis object data event size and memory footprint. Most sub-detectors are defining DQM monitoring tasks to be integrated within general frameworks and are starting to specify top-level summary plots. Initial calibrations (using test beam, cosmic-ray data, and laboratory measurements) are being prepared with sufficient precision for the start-up. Calibration and alignment workflows are becoming clearer and are being tested as part of the CSA08 challenge.

Many tasks from the Detector Performance Groups are driven by immediate needs and goals of challenges and global runs, making more difficult the design of general architectures and frameworks that would keep complexity under control and enable automation of procedures in the future. Since the number of tasks to be done is still growing, prioritization of the essential ones will be needed before start-up.

Preparations for First Physics

CMS made great progress in preparing the analysis of the first physics data. CMS has set up an organisation in working groups and in software infrastructure to deal with the first data and derive the relevant physics results quickly. The system has been tested in CSA08 and as proven to be effective. The plan of attack follows two parallel streams. The first one is geared towards the first analysis and focuses on object reconstruction of particles, such as jets, muons and electrons, and is aimed at first physics papers of Standard Model measurements with these objects, such as the measurement of the inclusive charged particle spectrum. The second stream is targeted at early searches for new physics. These activities are organised in Physics Objects Groups (POGs) and Physics Analysis Groups (PAGs). For both the POGs and PAGs, staffing needs and availability of manpower have been examined and priorities have been assigned. The overall staffing level, though not fully available as requested, seems adequate. A critical role is also played by the Detector Performance Groups (DPGs) and the interface of the DPGs, POGs and PAGs is structured in vertical integration efforts, such as common workshops and other joint meetings. A Physics Analysis Toolkit (PAT) has been implemented starting in January 2008. The PAT integrates offline tools, implements POG algorithms, addresses PAG needs and should be easy to use for non-experts while providing enough flexibility and power for advanced users. By setting up PAT as a common tool-kit, duplication of effort is avoided and new users are provided with an easy start into the data analysis. At present the toolkit is used by about 20 people (experts), but tutorials are set up to ramp up usage quickly. A fast and major success of

the new organisation was the simulation of 500 million Monte Carlo events. The CSA08 effort is being used to emulate real data taking and first analyses. Results of this effort were shown to provide proof of readiness to deal with the first LHC data as it arrives. Attention is needed for the training of people to use the PAT, the recruitment of manpower in some areas and the handling of the systems with the fast evolution of the software.

Overall Conclusion
The LHCC notes that good progress was reported on the construction, integration, installation and commissioning of the initial CMS experimental and the preparation for the first LHC run and physics is well-advanced. The Committee considers that it is realistic to expect CMS to have an initial working detector for the start of LHC operation in 2008.

8. REPORT FROM THE TOTEM REFEREE

The LHCC heard a report from the TOTEM referee, concentrating on the status of the TOTEM detectors and the early physics programme.

The referee reported on the status of the TOTEM detectors. Series production of the Cathode Strip Chambers (CSCs) for the T1 Telescope is advancing well and the chambers already delivered to CERN are under test. A new design of the T1 Telescope support is needed to resolve interference with the nearby vacuum equipment. Progress in the design of the `11-th Card' electronics read-out modules for the T2 Telescope is slower than expected and is delaying the detector production. The TOTEM installation plan for the T1 and T2 telescopes in time for the first LHC run in 2008 remains tight and is being reviewed. Good progress was reported on the Roman Pots (RPs). The first stack of silicon detectors for the RP stations has been mounted and the silicon assembly is expected to be installed in the LHC tunnel by the beginning of May 2008. TOTEM plans to install a total of 4 such assemblies prior to the start of LHC.

The referee also reported on the TOTEM early physics programme. The programme consists of the measurement of elastic and diffractive protons with the initial LHC luminosities and with various values of β^*.

9. REPORT FROM THE RD42 REFEREE

The LHCC heard a report from the RD42 referee on the Collaboration's programme concerning the development of intrinsically radiation-hard Chemical Vapour Deposition (CVD) diamond devices.

Good progress was reported for the past year. Improvement in the charge collection properties of CVD was reported; the radiation-hardness of diamond trackers based on both polycrystalline (pCVD) and single-crystal (scCVD) material was studied; a complete ATLAS diamond pixel detector module was successfully tested; and the ATLAS diamond-based Beam Condition Monitor (BCM) has been installed.
The LHCC considers that the proposed research programme for 2008, concentrating on a continuation of the radiation-hardness of diamond trackers and pixel detectors, the

construction of two additional pixel detector modules, the beam tests with diamond trackers and pixel detectors and the furthering of the diamond characterization, to be reasonable.

In order to continue their research programme, the RD42 Collaboration requests financial support from CERN and from the external funding agencies together with the use of CERN facilities, such as space and access to test beam set-ups. The Committee considers that diamond-based detectors are one of the options for the LHC experiment upgrades and their further development should be taken up by the experiments interested in such a technology. In order to share experiences and infrastructure, the LHCC encourages the RD42 Collaboration to work closely with other R&D projects. In view of the above, the CERN Physics Department is not in a position to cover the request for funding for 2008, but it agrees to continue providing support in terms of facilities and manpower.

Under the above terms, the LHCC **recommends** that the RD42 project be continued in 2008. A status report is expected to be submitted to the LHCC in one year's time.

10. TEST BEAMS

The LHCC heard a report from the SPS and PS Co-ordinator. All accelerator shut-down activities are on schedule. The updated version of the CERN Accelerator Schedule (Version 2.5 of 22 April 2008) includes the re-commissioning of the LHC TI2 and TI8 transfer lines and the Pb-ion source runs. The schedules for the PS and SPS Fixed Target Programmes have been released, and the physics runs are scheduled to start at the PS on 19 May and at the SPS on 29 May.

11. REPORT FROM THE LHC PROGRAMME CO-ORDINATOR

The LHCC heard a report from the LHC Programme Co-ordinator. Excellent progress was reported on the commissioning of the LHC without beam. The cool-down of the accelerator is advancing well and the hardware commissioning is also making excellent progress. Cool-down of the LHC accelerator is expected to be complete by the end of June 2008. Access to the LHC accelerator and to the experimental areas will be closed in mid-July 2008, in preparation for the first attempt to inject beam into the LHC at the end of July 2008. The Co-ordinator also reported on the initial LHC running scheme in 2008 and summarised the objectives of the first run. Training quenches observed at about 5.8 TeV in Sector 4-5 resulted in the decision to start LHC operation at 5 TeV in 2008, as no quench is expected below 5.5 TeV. The magnet training to 7 TeV will be completed during the 2008-2009 shutdown period, in time for the 2009 LHC run.

12. REFEREES

The LHCC referee teams are as follows:

ALICE: M. Gonin, J. Haba (Co-ordinator)

ATLAS: F. Forti, V. Kekelidze (Co-ordinator), R. Mankel, P. Mato

CMS: S. de Jong, M. Martinez-Perez, S. Smith (Co-ordinator), R. Yoshida

LHCb: S. Dalla Torre, C. Niebuhr, B. Peyaud (Co-ordinator)

TOTEM: S. Dalla Torre

MOEDAL: B. Peyaud

LHCf: M. Mangano, C. Niebuhr

RD39: S. de Jong

RD42: V. Kekelidze

RD50: R. Yoshida

LCG: F. Forti (Co-ordinator), R. Mankel, M. Martinez-Perez

13. The LHCC received the following documents:

Minutes of the 92nd LHCC meeting held on Wednesday and Thursday 20 and 21 February 2008 - LHCC-2008-003

Expression of Interest for an LHCb Upgrade - LHCC-2008-007

RD42 Status Report: Development of Diamond Tracking Detectors for High Luminosity Experiments at the LHC - LHCC-2008-005

14. DATES FOR LHCC MEETINGS

Dates for **2008**:
2-3 July
24-25 September
19-20 November

Emmanuel Tsesmelis
E–mail: LHCC.Secretary@CERN.CH
Tel. 78949, 164057

LHCC Secretariat: Morna Robillard (Bldg. 3/R-012) Tel. 73224
morna.robillard@cern.ch

CERN/SPSC-2008-016
SPSC-086
22-23 April 2008

MINUTES of the 86th Meeting of the SPSC
Held on Tuesday and Wednesday 22nd and 23rd April 2008

OPEN SESSION:

1. CAST T. Geralis
2. CLOUD K. Carslaw (J. Kirkby)
3. DIRAC L. Nemenov
4. NA63 U. Uggerhøj
5. CRYSTAL Experiment Proposal W. Scandale

CLOSED SESSION

Present:

S. Baird, J. J. Blaising, B. Bloch-Devaux, T. Carli, J.B. Dainton (Chair), M. Doser, J. Engelen (part time), M. Erdmann, A. Ereditato, L. Garrido, L. Gatignon, P. Giubellino, S. Katsanevas (part time), J. Knobloch, P. Kooijman (part time), M. Mannelli (Secretary), P. Marage, P. Newman, E. Perez, G. Ridolfi, U. Wiedemann

Apologies: H. Abramowicz, F. Close, P. Schleper

1. MINUTES OF THE 85th MEETING OF THE SPSC, HELD ON JANUARY 15th and 16th, 2008

The Minutes were approved.

2. REPORT FROM THE CHAIRMAN

The Chairman reported on the Research Board meeting, RB183. The following points were presented and, where necessary, discussed:

1. the appreciation by the SPSC of the exceptionally good beam delivery in 2007 to all data-taking, fixed-target, experiments;
2. that NA62 had taken very good data in its aim to measure the $^{K\to ev}/_{K\to\mu v}$ decay rate ratio;
3. that P326 R&D in preparation for the possibility of measuring the decay BR $K\to\pi\nu\nu$ is progressing particularly well, leading now to the endorsement by the SPSC to begin the next stage of R&D work on the "Gigatracker" endorsed by SPSC;
4. the publication by OSQAR of its important first result demonstrating that the signal for anomalous birefringence from PVLAS could not be confirmed;
5. the recommendation from the SPSC that the 2008 program of work by OSQAR be supported;
6. that the AD program continued to make major progress towards trapping and measuring anti-hydrogen with a view to CPT tests, and that the AD experiments were producing impressive new results;
7. that the SPSC endorses 2008 data-taking plans of all AD experiments (ATRAP, ASACUSA, ALPHA and ACE;
8. that, following further information on the allocation of resources within the collaboration, the SPSC recommends approval of the AEGIS experiment;
9. that the SPSC endorses the request by the OPERA experiment in LNGS for maximum possible protons on target in CNGS in 2008;
10. that the SPSC accepts the case for diffractive data-taking in COMPASS in 2008, and recommends that beam be provided accordingly; the SPSC continues to reserve its judgement on the case for data-taking for central hadron production.

The Research Board noted the points in 1, 2, 4, and 6 above. The Research Board noted the endorsement in 3 above, and it was agreed that the chief scientific officer would pursue further the resources needed from CERN, as well as from outside collaborators, before confirming that the Gigatracker R&D could go ahead. The Research Board supported the recommendation in 5 above for the work proposed by the OSQAR collaboration in 2008, confirmed the SPSC support for AD data-taking in 7 above, confirmed approval of the AEGIS experiment in 8 above, accepted the case for maximum possible protons on target in CNGS in 2008 in 9 above, and confirmed the recommendation that so far the SPSC supports beam time necessary only for diffractive data-taking for the COMPASS experiment in 2008.

3. STATUS OF ACCELERATORS

S. Baird reported that all shutdown work and installation had been completed on schedule and the accelerators were now restarting as planned.

He outlined the AB department concerns with the possible failure of the PS Motor Generator. The rotating part of the generator was changed in 2006 after over 30 years of operation. During the 2006 start-up, the spare failed after less than 1000 hours, and was then replaced by the refurbished original rotor. As a result it decided to replace the Motor Generator with a new PS main power supply. This supply will be commissioning in 2010 for operation in 2011. Until 2011 there is no spare in case of failure.

In case of failure before 2011, a longer LHC filling scheme would have to be used along with a much reduced physics program for only CNGS and EAST HALL. After an analysis of the different PS cycles it has been found that the EAST HALL cycle is the most stressful for the rotor. Therefore, to reduce the risk of failure, the AB department will ask the Research Board to consider limiting the use of the EAST HALL cycles in the next 3 years. The proposed 2008 cycle would have around the same stress levels for the rotor as the 2007 operation. A reduction from 9 to 7 EAST HALL cycles in each 48 seconds super cycle would reduce this level by around 15%.

S. Baird also mentioned a recent flood in ECX5, which was caused by flood water from a field next to BA5 flooding into BA5 and down into the pit. The cleanup will take 2-3 days and may delay the start of SPS beam operation.

4. STATUS OF EXPERIMENTAL AREAS

L. Gatignon reported on the status of the Experimental Areas.

The CNGS work, to move away electronics from critical places and to significantly reinforce the shielding to protect the new locations for the electronics (TGV4 and TSG4), is still on schedule for completion in week 21. In parallel simulations have been completed that show that the shielding attenuation factors are adequate: 104 to 106 in TSG4 and 103 to 104 in TCV4. Some shielding in TCC4, along the target, less critical, may be staged to 2009. The striplines have been replaced and vibration tests have validated the new design. The CNGS test and commissioning phase will follow. The detailed planning of this commissioning is still being worked out, but it will take several weeks before the physics run can start.

In the East Area, one quadrupole was found faulty and has been replaced. Now normal maintenance and preparation work is ongoing as planned. The preparations for the CLOUD experimental area have been postponed, following the cancellation of their 2008 run.

In the North Area five quadrupoles have been repaired. A vacuum leak in the M2 beam line, just behind the T6 primary target in a very radioactive region, has been repaired successfully. There is still a small water leak on the T6 TAX dump collimator that needs intervention before beam can be sent. *Otherwise the annual maintenance work is going on.* The preparations for the user installation are about to start, but are second in priority compared to the CNGS work.

The faulty quadrupole QFC54 in the AD ring has been repaired successfully after finally a set of spare coils was found. The beam stoppers are now on a separate compressed air circuit. All the shutdown work is completed on schedule, with the exception that only 1 out of 2 Beam Ionisation Profile monitors was repaired and modified this shutdown, to avoid the bake-out of one more sector.

The AB department has held a 3-day workshop in January, from which one outcome is that the PS machine cycles for the East Area are very stressful for the PS rotor, for which no spare is available until at least 2010. Therefore a discussion is ongoing on whether the present amount of EAST cycles can be maintained or whether it should be reduced somewhat.

The beam line for MERIT has been dismounted and rebuilt to serve the nTOF facility that expects to resume operation by the end of the 2008 run.

The SPSC notes with pleasure that the shutdown activities, including major programs of work for MTE installation and CNGS consolidation remain on track for successful completion. **The SPSC appreciates** all the work carried out by the accelerator and experimental area teams, to ensure both the timely start-up and reliable operation of the CERN accelerator complex for the Fixed Target program.

5. PS AND SPS SCHEDULES

E. Perez reported on the PS and SPS schedules. With the beginning of the run approaching, weekly meetings with PS and SPS users will restart on May 15.

The user schedules have been updated, with the main changes listed below:

- The CLOUD run (T11 line in the East Area) is postponed to 2009, because a (key) chemical analyzer will not be available for the planned 2008 run.

- The CALICE group requests 2 weeks at the PS and one week at the SPS to test a prototype of digital hadron calorimeter. The requests can be inserted in the schedules.

Both the PS and SPS user schedules are quite busy and well subscribed to, but all user requests could be fulfilled.

The operation mode of the accelerator complex in 2008 will involve a long super-cycle (48 sec), serving the North Area users, CNGS (3 cycles), the LHC, the East Area, and MD (Machine Development) studies. Such a super-cycle can in principle accommodate nine spills to the East Area. This would provide the users (especially the DIRAC experiment and the irradiation facility) with the statistics they require. However, concerns with the PS rotating machine (power system of the PS main magnets) are being raised: the machine is old and no spare is available. Until the new power system becomes operational (2011), one may want to limit the risk of failure by reducing the number of spills sent to the East Area (since these spills put a big load on the PS rotor). A reduction of the load on the machine will be discussed at the next Research Board.

In 2008 CNGS should be operated with a sustained proton intensity of $4*10^{13}$ protons per extraction. The possibility of having more than 3 CNGS cycles in the super-cycle may be considered for 2009, but will not be implemented in 2008.

6. DISCUSSION OF THE OPEN SESSION

6.1 CAST

The SPSC congratulates the CAST collaboration for the publication of the results of their Phase I operation, in vacuum, and the results of their analysis of the Phase II operation, with He4.

The SPSC also welcomes the addition new collaborators, and the extension of the CAST program to include low energy axions.

The SPSC heard a detailed report on the implementation of the He3 system, congratulates CAST on successful completion of this upgrade, and **welcomes** the start-up of data taking with He3.

The SPSC supports the proposed modification to the operation protocol, aimed at covering the axion mass range up to 1.2eV by 2010, and will follow with interest the commissioning of the new detectors. It is essential for the successful completion of this program, that CAST maintain sufficient manpower and expertise to maintain all critical systems operational until 2010 included.

6.2 CLOUD

The SPSC continues to look forward to further analysis and publication of results obtained with the first generation prototype chamber in the 2006 run.

The SPSC notes progress in the preparation of the second-generation prototype, and supports the request to further delay the run to 2009. The SPSC restates its support of the requested modifications to the T11 area, to accommodate the planned apparatus in a timely fashion.

6.3 DIRAC

The SPSC continues to look forward to publication of the $\pi-\pi$ atom lifetime measurement, based on the 2001-2003 data set.

The SPSC notes progress, in particular with the Trigger electronics, to overcome unforeseen rate limitations uncovered in the 2007 run, **and looks forward** to results from the 2007 data set, including a search for pi-K atoms.

The SPSC supports the request from DIRAC to continue running in 2009, in order to collect adequate statistics for the proposed measurement of the π-π atom lifetime, with a precision similar to the theoretical uncertainty, and a possible first measurement of the $\pi-K$ atom lifetime, subject to successful commissioning of the completed apparatus in 2008.

6.4 NA63

The SPSC notes with pleasure that the first publications of results from the 2007 run are well advanced.

The SPSC notes that plans for the 2008 run have been modified, to cope with a reduced level of funding, **and looks forward** to funding being restored to resume the planned program of measurements in 2009.

6.5 CRYSTAL EXPERIMENT PROPOSAL

The SPSC welcomes the proposal, which may lead to potentially important developments for the collimation of high intensity beams in accelerators, and the LHC in particular.

7. FOLLOW UP OF LNGS EXPERIMENTS

7.1 OPERA

The SPSC notes with pleasure that brick production continues to make very good progress, and that 112'000 bricks have so far been installed in the OPERA experiment. This represents some 75% of the total 150'000 bricks, which is now the final goal set by the collaboration.

As a result, OPERA remains well on track to complete brick installation in the summer of 2008.

The SPSC also notes with pleasure that OPERA is making full use of the data taken in 2007, to successfully exercise and further improve their analysis chan.

7.2 ICARUS

The SPSC is pleased to note the continued major progress towards completion and commissioning of ICARUS in 2008.

8. FOLLOW UP ON EXPERIMENTS AND PROPOSALS

8.1 COMPASS

In addition to the diffractive part of their 2008 hadron physics run, **the SPSC also supports** the COMPASS request for a substantial central hadron physics run in 2008, on the grounds that this is motivated by a set of well defined goals which, if met, will establish the ability of the experiment to make significant progress in this field.

The quality of the physics results from the 2008 run will then provide a firm basis on which to evaluate requests for further hadron beam running.

9. DOCUMENTS RECEIVED

[1] Minutes of the 85th Meeting of the SPSC held on 15-16 January 2008;
CERN-SPSC-2008-008; SPSC-085.

[2] 2007 Progress Report on PS215/CLOUD; CERN-SPSC-2008-015; SPSC-SR-032.

[3] Proposal of the Crystal Experiment; CERN-SPSC-2008-014; SPSC-P-335.

[4] Status Report of the CAST Experiment; CERN-SPSC-2008-013; SPSC-SR-031.

[5] Status Report 2008: NA63 Electromagnetic Processes in strong Crystalline; CERN-SPSC-2008-012; SPSC-SR-030.

DRAFT CERN/INTC-2008-031
INTC-031
May 29, 2008

ISOLDE AND NEUTRON TIME OF FLIGHT
EXPERIMENTS COMMITTEE

Minutes of the 31st meeting of the INTC
Held on Monday 19 and Tuesday 20 May 2008

OPEN SESSION

Monday 19 May 2008 at 13:30 h, Main Auditorium

The Chairman of the INTC, Mark Huyse, opened the meeting and announced the agenda of the open session.

ISOLDE Technical Report

The AB-ISOLDE representative for the INTC, Mats Lindroos, summarized the technical activities during the shutdown period 2007/2008 and the startup of the 2008 campaign. It was pointed out that the planning of the shutdown work required a sequential order since for a large number of tasks a representative of the Radioprotection group has to be present and only one person has been allocated for ISOLDE. This made the shutdown planning very time consuming and rather complicated. It was also stressed that the startup period at CERN is as well a very complex task since a lot of machines and facilities at CERN are involved and due to interlinks of personnel and resources all scheduled items suffer from delays and problems that may occur.

A large part of the shutdown work concentrated on the target and separator area, especially to address the limitation of the proton beam current to 1μA on the GPS targets due to an increase of activated air being released through the stack of the ISOLDE hall. A jump of the activated air intensity was observed last year and after various simulations and a detailed study of the target zone a new scenario for the ventilation of the target area has been initiated: the air will flow from the target area towards a tunnel, which is far from the targets, before being extracted. This should give additional time for the activated air to decay. The new scenario will be tested with the first targets on the GPS front-end.

The Committee was also informed on other technical issues: a new water cooling system has been installed for the targets. This system is much easier accessible and allows a much faster and easier maintenance. Furthermore, a filter for the pressurized air drying unit broke again which caused aluminum-oxide to leak into the system thus blocking vacuum equipment. After the repair the pressurized air system was purged and an alternative solution with a different drying system is foreseen.

The REX-ISOLDE setup has seen various maintenance work in the shutdown period, including a complete renovation of the REX-TRAP electrodes. The whole system was setup for the first on-line run for a ^{9}C beam. The startup and setup was hampered by several technical problems which were solved until the start of the run. Further projects for REX-ISOLDE are planned in 2008, e.g. a test of the mass separation of isobars, a direct injection of bunches from the ISCOOL into the EBIS, emittance measurements and the injection of a beam from a MiniMono ion source into REX-TRAP.

The shutdown work also covered the off-line test of the new front-end FE6, including tests of the beam optics and planning of the installation at ISOLDE. Moreover, the new RILIS solid state pump lasers have been installed which will be used in parallel to the copper-vapour-lasers for the rest of the year. The new pump lasers run at wavelengths different from those of the copper vapour lasers and the beam parameters are different as well. Some ionization schemes have to be changed in order to apply the new laser system. A first test was performed for the ionization of Ga isotopes.

Finally, the Committee was informed on the status of the HIE-ISOLDE project. The Phase I with the RFQ cooler and buncher ISCOOL, the RILIS upgrade, and the energy upgrade of the REX-LINAC to 5.5 MeV/u received significant external funding, reaching in total 8 MCHF for material with about 5.5 MCHF still missing for completion. While the RFQ and the new RILIS system are fully funded and both projects are almost completed, the design study on the superconducting LINAC has just started.

ISOLDE Physics Report

The ISOLDE Physics Coordinator, Alexander Herlert, summarized the planning for 2008 and reviewed the startup and the first runs in 2008. He also informed the Committee on the present status of INTC experiments: After the on-line period in 2007, 63 experiments were active with in total 470 radioactive ion beam shifts left. After the February INTC meeting 5 experiments were closed by the users and 9 new experiments were approved by the Research Board, leading to 67 active experiments with about 700 RIB shifts to be considered for the 2008 schedule.

It was planned to have two weeks of cold check-out after the long shutdown period in order to start the ISOLDE machines, followed by a two week long off-line period for experiments and startup of REX ISOLDE and the ISCOOL buncher and cooler. In the off-line period the new RILIS laser system was successfully tested for laser ionization of Ga, and a new laser setup at the COLLAPS experiment was installed and tested for a future on-line run on neutron-rich Be isotopes. At the HRS the ISCOOL was successfully tested after the shutdown maintenance 2007/2008. The Committee was informed that it is planned to use the ISCOOL setup throughout the year and that for each HRS run an additional day for setting up the ISCOOL buncher will be added to the schedule.

From the CERN accelerator schedule 2008 it was foreseen to have protons at ISOLDE starting May 5 and to start the physics program on May 9. The shutdown work was finished on time and protons were delivered according to schedule. The running period will last until November 12, i.e. 27 weeks for the ISOLDE on-line measurement program. The Committee was informed that for testing and maintenance of other accelerator facilities at CERN, longer blocks of days without protons to ISOLDE have been planned, making the scheduling of ISOLDE experiments more difficult. In addition to these constraints, the limitation of actinide targets to about 10 new units and RILIS operation time to less than 2000 hours restricted the

scheduling of some experiments. The beam requests with in total 550 shifts needed to be cut down and 23 experiments could be scheduled until the end of August. The second part of the 2008 experiment schedule will be published in June.

The first on-line run was devoted to a ^{9}C beam post accelerated with REX-ISOLDE. Due to a tremendous effort from the technical group initial problems with the low-energy part of REX-ISOLDE were solved including the first injection of a molecular beam from ISCOOL into REX-TRAP. In addition, ISOLDE faced again the problem that the machine controls were not working well, hampering the setup and the operation of the targets and the separators. Although the yield for ^{9}C was not sufficient, the transfer of a CO beam through ISCOOL, the breakup in REX-EBIS, and the post-acceleration was successful and a ^{10}C beam was delivered to the users for tests of their setup. The first run on the GPS was dedicated to a target test for a MiniMono ECR ion source and a new Y_2O_3 target material, successfully measuring yields for ^{72}Kr and carbon isotopes.

The Committee was also informed that the new solid state laboratory is operational and that most of the equipment and experimental setups has been moved from building 275 to the new location in building 115. Only a few experiments will stay in building 275. Finally, an update was given on the new safety structure at ISOLDE, i.e. having a GLIMOS (Group Leader in Matters of Safety) for all experiments and installation supervisors for the permanent experiments at ISOLDE. Users are requested to contact these persons prior to arrival and setting up of their equipment. Users were also reminded that a new Radioprotection course has to be followed when a dosimeter needs to be replaced or a new dosimeter is requested.

n_TOF Physics Report

The n_TOF representative, Daniel Cano Ott, gave a status report on the physics program at the n_TOF facility. He summarized the results from the experimental phase 2001-2004 which aimed at neutron capture and fission cross sections for the transmutation of nuclear waste, neutron capture cross sections relevant to nuclear astrophysics, cosmochronometry, and stellar nucleosynthesis, and fundamental cross sections as well as photon strength functions and nuclear level densities. It was pointed out that the n_TOF facility is unique with respect to its high duty cycle and the possibility to study radioactive samples of a few mg only.

With n_TOF an energy range from 0.1 eV to 1 GeV can be addressed and with the present flight path of 185 m a good energy resolution is achieved. In addition, n_TOF has been the first neutron beam line world-wide proposing, building, and operating a fully digital DAQ, which allows to record the full history of every detector with nearly zero dead time. New low-mass neutron beam monitors and fission detectors have been constructed as well as a total absorption calorimeter (TAC) for (n,γ) measurements.

The results obtained in 2001-2004 include capture and fission cross sections relevant for nuclear waste transmutation, nuclear astrophysics, e.g. for the s-process, and fundamental nuclear physics. For the future it is planned to improve the detector systems and to add a second vertical beam line with a flight path of 20 m length, which will be 100 times more intense than the present one. The physics program at n_TOF will be continued in November 2008 when the new target unit is ready for operation.

The following proposals, addenda and status reports were then presented:

1. **CERN-INTC-2008-020 and INTC-P-243,** *Fast-timing studies of nuclei below ^{68}Ni populated in the beta-decay of Mn isotopes*, Luis Fraile

2. **CERN-INTC-2008-021 and INTC-P-244,** *Measurements of octupole collectivity in ^{220,222}Rn and ^{222,224}Ra using Coulomb excitation*, Marcus Scheck

3. **CERN-INTC-2008-023 and INTC-P-245**, *Conversion Electron Study to Identify the Spherical 0_2^+ State in ^{32}Mg via its E0 Decay***,** Peter Thirolf

4. **CERN-INTC-2008-025 and INTC-P-246,** *Measurements of competing structures in neutron-deficient Pb isotopes by employing Coulomb excitation*, Janne Pakarinen

5. **CERN-INTC-2008-027 and INTC-P-247**, *Shape coexistence measurements in even-even neutron-deficient Polonium isotopes by Coulomb excitation using REX-ISOLDE and the Ge MINIBALL array*, Beyhan Bastin

6. **CERN-INTC-2008-028 and INTC-P-248**, *Studies of beta-delayed two-proton emission: The cases of ^{31}Ar and ^{35}Ca*, Hans Fynbo

7. **CERN-INTC-2008-017 and INTC-SR-009**, *Report to the INTC on experiment IS406: Precision study of the beta decay of ^{62}Ga*, Joakim Cederkall

8. **CERN-INTC-2008-019 and INTC-SR-010**, *Charge radii of magnesium isotopes and transition to a deformed configuration towards N=20*, Deyan Yordanov

9. **CERN-INTC-2008-024 and INTC-P-201-ADD-1**, *Ultra Fast Timing Measurements at ^{78}Ni and ^{132}Sn*, Henryk Mach

10. **CERN-INTC-2008-022 and INTC-P-222-ADD-1**, *Study of polonium isotopes ground state properties by simultaneous atomic- and nuclear-spectroscopy*, Thomas Cocolios

CLOSED SESSION

Tuesday 20 May 2008

Present: J. Billowes, Y. Blumenfeld, Ph. Chomaz, M. Doser, P.-H. Heenen, A. Herlert (Secretary), M. Huyse (Chairman), R. Julin, H. Leeb, M. Lindroos, K. Riisager, Ch. Scheidenberger, V.Vlachoudis, U. Wahl

Apologies: J. Engelen, M. Fanciulli

1. INTRODUCTORY REMARKS

The Chairman opened the meeting and informed the Committee that the CERN Research Board had approved the experiments from the last meeting. He also informed the Committee that in the Research Board a question was raised on the policy related to open access publications within the ISOLDE community and if ISOLDE publications are in line with CERN rules. It was pointed out that CERN requires that if a member of CERN personnel is on a scientific publication, the manuscript has to be submitted to the preprint service of CERN. In addition, internal refereeing from the PH department, especially worked out for the n-TOF and ISOLDE facilities, will ensure a high standard for publications presenting results obtained at CERN. Open access solutions offered by standard publishers like, e.g., APS, Elsevier, or Springer, are rather expensive with more than $1000 for each article. The Committee took note on the possibility to use the arXiv preprint server as well as the CDS preprint service from CERN and recommends the ISOLDE and n-TOF collaborations to establish a system where submission of preprints and updating of the accepted papers are guaranteed.

The Committee was also informed on the last CERN Science Policy Committee (SPC) meeting and that ISOLDE is included in the midterm plan up to 2013 as an approved experiment. The SPC discussed the possibility to have more CERN support for non-LHC experiments. A working group has been installed to prepare a full discussion on the MTP in the June meeting. An important input for the discussion on non-LHC physics is the relation between CERN funding and external contributions. The Committee asked the n-TOF and ISOLDE collaborations to provide the chairman of the INTC within the coming weeks with a global overview of the respective collaboration efforts in investment and running costs. A similar question is addressed to the AB department to report on investment and running costs related to the operation of ISOLDE and n-TOF.

2. MINUTES OF THE LAST INTC MEETING

The minutes of the 30th INTC meeting held on 11 and 12 February 2008 were approved without amendments.

3. STATUS OF ISOLDE

The Committee regarded the limitation of the proton beam intensity to 1μA at the GPS front-end as a major concern. If the recent change of the ventilation system does not reduce the amount of activated air, a limitation to 1μA can significantly affect the physics program.

Concerning the report on the status of HIE-ISOLDE, the Committee encouraged the ISOLDE Community to move forward to CERN management and to have HIE-ISOLDE approved as a CERN project.

The Committee was also informed on the backlog of shifts and that the ratio between requested and scheduled shifts is still in a healthy status. It was pointed out that there is no

need to cut or to reduce the number of shifts and that the Committee will judge submitted proposals solely on the physics case and feasibility. The ISOLDE Physics Coordinator will report in the next meeting on the backlog of the number of shifts and its evolution in the last years.

4. STATUS OF N_TOF

The Committee took note on the impressive achievements of the physics program, realised in the first n_TOF campaign. The next campaign is planned to start in November 2008 provided the new target is ready. The Committee suggested to have a report at the next INTC meeting. It was pointed out that all three approved n_TOF experiments will take place at the old flight path and that new proposals are in preparation for the upcoming INTC meetings. The new vertical flight path is under discussion and requires additional funding.

5. DISCUSSION ON THE OPEN SESSION AND ON LETTERS OF INTENT

The presentations of the proposals and status reports made during the open session were then discussed. It was reiterated again that the Committee discourages many addenda to running experiments in order to minimize the time span between the original proposal and the new beam time requests.

CERN-INTC-2008-020/P-243, *Fast-timing studies of nuclei below ^{68}Ni populated in the beta-decay of Mn isotopes*

The proposal aims at the investigation of the N=40 neutron sub-shell closure around ^{68}Ni by studying de-excitation of states in Fe isotopes populated in the beta decay of neutron-rich Mn isotopes. It is planned to use the Advanced Time-Delayed βγγ technique to measure dynamic moments and to deduce information on the nuclear structure in this mass region. The Committee stressed the importance of the physics case, considering the N=40 shell seems not to be very robust. The experimental technique is well under control and the neutron-rich Mn beams at ISOLDE have the required intensities. Nevertheless, the Committee showed concern on the possible contamination of the Mn beams with Ga isobars. In addition, the Committee pointed out that there is already an approved experiment aiming at the investigation of the beta decay of neutron-rich Mn isotopes and which is therefore complementary to the experiment proposed here. The Committee decided to **recommend** for approval by the Research Board **24 shifts** and suggests to schedule first the already approved experiment on the beta decay of Mn isotopes in order to obtain more information on the decay schemes relevant for the present proposal.

CERN-INTC-2008-021/P-244, *Measurements of octupole collectivity in ^{220,222}Rn and ^{222,224}Ra using Coulomb excitation*

The experiment proposes to study the octupole collectivity of heavy Rn and Ra isotopes. It is planned to obtain information on octupole correlations by use of Coulomb excitation of the first 3^- states in ^{220,222}Rn and ^{222,224}Ra at the MINIBALL setup. The Committee underlined the importance of the physics case and pointed out that octupole collectivity has not been studied much and that more information is needed from that mass region. In addition, the possibility to deduce information with respect to non-zero EDM was regarded as very exciting. The experiment is regarded as well suited and ISOLDE has the unique capability to provide the required Rn and Ra beams. The Committee decided to **recommend** for approval by the Research Board **22 shifts** and asks the Physics Coordinator and the target group to address the

possible risk of contamination of experimental equipment at REX-ISOLDE due to long-lived daughter nuclides.

CERN-INTC-2008-023/P-245, *Conversion Electron Study to Identify the Spherical 0_2^+ State in ^{32}Mg via its E0 Decay*

The proposal is directed towards the identification of the 0_2^+ state in ^{32}Mg. It is planned to use a Mini-Orange detector setup, which has already been successfully applied to observe the 0_2^+ state in ^{30}Mg. The Committee pointed out that data on the first excited 0^+ state will give important information and that its energy needs to be measured. However, the energy range, where the 0_2^+ state may be located, is not known. The assumptions made in the proposal might be too optimistic and the feeding from ^{32}Na, considering its possible spin and parity, might be too weak. So there is a risk that no transition can be identified due to the unavoidable background. The Committee suggested to first wait for the full analysis of the ^{32}Na decay, work from the same collaboration, and the outcome of an approved experiment on two neutron transfer on ^{30}Mg. Both may give valuable input for the present proposal. Upon these results, the Committee strongly encourages to submit another proposal.

CERN-INTC-2008-025/P-246, *Measurements of competing structures in neutron-deficient Pb isotopes by employing Coulomb excitation*

The aim of the proposed experiment is to investigate competing structures in neutron deficient Pb isotopes using Coulomb excitation at the MINIBALL experiment. This proposal is related to the letter of intent I074, which was endorsed in the last INTC meeting. The Committee pointed out that it is not clear if the expected accuracy of the data will be sufficient to disentangle different models. The analysis seems to be difficult and it is expected that the matrix elements are rather small. A more quantitative assessment may be possible when the results from similar experiments on Hg are ready. The Committee decided to first wait for the outcome of the required purity test of the Pb beam (as requested in the letter of intent). The Committee asked that a resubmitted proposal should further clarify the analysis procedure and to address the accuracy of the obtained matrix elements as well as the relation to the lifetime measurements. It was also requested to extend the proposal with simulations and to add more theoretical models for comparison.

CERN-INTC-2008-027/P-247, *Shape coexistence measurements in even-even neutron-deficient Polonium isotopes by Coulomb excitation using REX-ISOLDE and the Ge MINIBALL array*

The proposal intends to study the transition from vibrational-like character to shape coexistence in Po isotopes by use of Coulomb excitation. The Committee found the physics case clearly motivated and the envisaged experimental approach well established and under control. However, the purity of the Po beam with respect to Tl contamination was questioned, especially the planned technique of gating on the different release times of Po and Tl. The Committee **endorsed** the physics case of the proposal but did not recommend it yet for approval by the Research Board until yields for the Po and Tl isotopes as well as their release has been tested. The proposers are requested to send a status report once these results are available.

CERN-INTC-2008-028/P-248, *Studies of beta-delayed two-proton emission: The cases of ^{31}Ar and ^{35}Ca*

The aim of the proposed experiment is to investigate beta-delayed two-proton emission for ^{31}Ar and ^{35}Ca. The decay of ^{31}Ar has been studied before at ISOLDE and the proposal wants to employ a better experimental setup which will be more sensitive for two-proton detection and should also allow to deduce information on resonances relevant for the astrophysical rp process. The Committee confirmed the importance of data obtained for nuclides along the proton dripline. There was some concern that the feasibility of one of the aspects of the proposed experiment is unclear as the probability to observe two-proton emission might be small. In addition, it was not clear to the Committee how the mixing of sequential and direct two-proton decay can be distinguished. Nevertheless, information on (p,γ) cross sections can be obtained in the proposed experiment as well. The Committee thus **recommended** for approval by the Research Board **27 shifts** for the investigation of ^{31}Ar. The request for target development on ^{35}Ca is on hold until further proposals for neutron-deficient isotopes are brought forward to the Committee.

CERN-INTC-2008-017/SR-009, *Report to the INTC on experiment IS406: Precision study of the beta decay of ^{62}Ga*

The status report summarized the results from two measurement campaigns in 2002 and 2004 which were devoted to the determination of the branching ratio of the superallowed beta emitter ^{62}Ga using the Total Absorption Spectrometer at ISOLDE. The data analysis with respect to the branching ratio is still ongoing. The Committee showed concern on the disintegration of the collaboration of this experiment, which delayed the analysis and publication of results. As a byproduct of the experiment the half-life was also measured. Meanwhile other experiments are capable to measure half-lives much better and the situation for the branching ratio is unclear. Due to these circumstances the Committee decided to **close** the experiment and not to keep the remaining shifts for scheduling. Nevertheless, the Committee encouraged the publication of the results obtained so far. If the used method with the Total Absorption Spectrometer shows its potential with the ^{62}Ga branching ratio determination, other cases could be the subject of a new proposal.

CERN-INTC-2008-019/SR-010, *Charge radii of magnesium isotopes and transition to a deformed configuration towards N=20*

In this status report the proposers ask for additional shifts to complete their experimental program on magnesium isotopes and to obtain the charge radii from isotope shift measurements at COLLAPS. It is planned to combine traditional fluorescence detection with the more sensitive beta-decay detection method. The Committee regarded the spin determinations of ^{31,33}Mg as a significant result and the experimental program as being in good shape. It is well defined and will provide a lot of information for the island of inversion. Concerning the splitting of the program and the requested shifts into neutron-rich and neutron-deficient nuclides, the Committee found the physics case for the neutron-rich isotopes as most important. The Committee **recommended** for approval by the Research Board **12 shifts** to further explore the neutron-rich Mg isotopes towards N=20. In the case of neutron-deficient Mg isotopes, the results of the extended target tests (6 shifts) were successful and even resulted in the measuring of the hyperfine splitting of ^{21}Mg. In the present Status Report 8 shifts are asked for the neutron-deficient Mg but no actualisation of the scientific case was given (the original proposal dates from 2003) and no account on how these shifts would be

divided over the different isotopes was given. The Committee encouraged the proposers to submit a new proposal with a more defined physics motivation.

CERN-INTC-2008-024/P-201-ADD-1, *Ultra Fast Timing Measurements at ^{78}Ni and ^{132}Sn*

The addendum of the proposal P201 aims at the determination of level lifetimes of neutron-rich Ga isotopes in the vicinity of ^{78}Ni by use of the Advanced Time-Delayed method. It is expected to get a clean Zn beam from ISOLDE if a uranium carbide target with a quartz transfer line will be used. The Committee regarded only the measurements for ^{80}Zn and ^{81}Zn as sufficiently motivated, although not much is known about these neutron-rich Ga isotopes. The experiment and its detector setup work well and it will be interesting to compare the new data with shell model predictions and existing data which are quite old. The Committee **recommended** for the approval by the Research Board **11 shifts** for the investigation of ^{80}Zn and ^{81}Zn including the required calibration measurements. The Committee requested for ^{82}Zn as well as for the other cases a new proposal, if this research program will be continued. During the presentation of the addendum many results of the previous runs were presented. The Committee encourages strongly the full publication of these results in regular journals.

CERN-INTC-2008-022/P-222-ADD-1, *Study of polonium isotopes ground state properties by simultaneous atomic- and nuclear-spectroscopy*

In the addendum of proposal P222 the continuation of the in-source laser spectroscopy on Po isotopes is requested. In addition to even-mass nuclei, some odd-mass isotopes could be studied in the past successful run as well. With the present data a deviation from the spherical droplet model could be observed. The Committee fully supported a continuation of the measurement program and the extension to more neutron-rich isotopes in order to explore the nuclear structure beyond the N=126 shell. The Committee **recommended** for the approval by the Research Board **24 shifts** and encouraged the development of a target with a faster release of ^{192}Po.

CERN-INTC-2008-018/I-076, *Study of oblate nuclear shapes and shape coexistence in neutron-deficient rare earth isotopes*

The letter of intent requests the development of rare earth beams for the study of oblate nuclear shapes and shape coexistence in neutron-deficient rare earth isotopes. It is planned to employ the MINIBALL experiment to perform Coulomb excitation. Besides the beam intensities, the beam purity is of importance. The Committee could not make on the basis of this letter of intent a full assessment of the physics case. However, the development of rare earth beams has high priority and is ongoing and the Committee regarded this letter of intent as a further support for this beam development. The Committee asked the target group to prepare for the next meeting a report on the present status of the target development for radioactive beams in the rare earth region.

CERN-INTC-2008-026/I-077, *Nuclear electron capture in few-electron systems*

The presented letter of intent aims at an independent study of a finding observed in the ESR storage ring at GSI Darmstadt, where an exponential decay with a superposed oscillation was observed in the case of hydrogenlike ^{140}Pr and ^{142}Pm. There is no consensus on the origin of this oscillation (neutrino oscillation, hyperfine structure effect, or experimental artefact) and further experiments are needed to resolve this question. The Committee found the physics

case of highest interest and also supported the idea to use an ion trap for the decay studies, since it will give complementary data from an experimental environment significantly different as compared with a storage ring. The Committee also pointed out that such kind of an experiment is rather difficult and that the preparation of a uniquely defined state is questionable. Nevertheless, the technical development of low-mass charge-bred beams with respect to zero and one-electron systems was supported by the Committee.

CERN-INTC-2008-029/I-078, *Fast-timing studies from the beta-decay of n-rich Cl isotopes*

The letter of intent requests the development of neutron-rich Cl beams in order to investigate Ar nuclei and to test shell model predictions below N=28. The Committee regarded the physics case as well motivated but too unspecific with respect to its feasibility. The Committee did not see a high priority for the Cl beam development on this letter of intent only and strongly suggested to look for other possible users for a Cl beam at ISOLDE.

Out of the **204** radioactive beam shifts requested to the INTC a total of **120** have been recommended for approval by the Research Board.

6. A.O.B.

At the next meeting a new, recurrent item will be added to the agenda in order to examine the status of the current ISOLDE experiments. The aim is to spot inactive experiments (no beam in the last three years) and to discuss experiments with only some left-over shifts. A Status Report on the MISTRAL project is required for the next INTC. In addition, the usage and reallocation of floor space will be reviewed.

7. CONCLUDING REMARKS

The Chairman thanked Karsten Riisager as ISOLDE Physics Group Leader and Yorick Blumenfeld as referee to the INTC for their effort in the last meetings. Karsten Riisager will be replaced as ISOLDE Physics Group leader by Yorick Blumenfeld this summer.

8. DATES OF NEXT MEETING

The next INTC meeting will take place on **Monday 3 and Tuesday 4 November 2008**. The deadline for submission of proposals is **Monday 6 October 2008**.

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